Extron® Electronics

INTERFACING, SWITCHING AND DISTRIBUTION

User's Guide

FOX 2G Tx/Rx AV

Video and Audio Fiber Optic Transmitter and Receiver

Precautions

Safety Instructions • English

⚠️ This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

⚡ This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Consignes de Sécurité • Français

⚠️ Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).

⚡ Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions• Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conserver les instructions • Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Sicherheitsanleitungen • Deutsch

⚠️ Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

⚡ Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits-und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Instrucciones de seguridad • Español

⚠️ Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.

⚡ Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean específicamente recomendados por el fabricante, ya que podrian implicar riesgos.

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Avertissement

Alimentations• Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Le matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de le contourner ni de le désactiver.

Déconnexion de l'alimentation• Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'il y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype équivalent recommandé par le constructeur. Mettre au reut les batteries usagées conformément aux instructions du fabricant.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stomversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und darauf treten kann oder Objekte darauf- oder umittelbar dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den selben oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligroso u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalentamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

安全须知 • 中文

⚠ 这个符号提示用户该设备用户手册中有重要的操作和维护说明。

⚡ 这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。

注意

阅读说明书 • 用户使用该设备前必须阅读并理解所有安全和使用说明。

保存说明书 • 用户应保存安全说明书以备将来使用。

遵守警告 • 用户应遵守产品和用户指南上的所有安全和操作说明。

避免追加 • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

警告

电源 • 该设备只能使用产品上标明的电源。 设备必须使用有地线的供电系统供电。 第三条线（地线）是安全设施，不能不用或跳过。

拔掉电源 • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

电源线保护 • 妥善布线， 避免被踩踏，或重物挤压。

维护 • 所有维修必须由认证的维修人员进行。 设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

通风孔 • 有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。 不要用任何东西挡住通风孔。

锂电池 • 不正确的更换电池会有爆炸的危险。 必须使用与厂家推荐的相同或相近型号的电池。 按照生产厂的建议处理废弃电池。

声明

所使用电源为 A 级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取切实可行的措施。

FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. The Class A limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

NOTE *This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance with FCC emissions limits.*

Quick Start Guide — FOX 2G Tx/Rx AV

Step 1

Turn off all equipment or disconnect it from power sources. Mount the transmitter and receiver as required.

Step 2

Connect a low resolution video source to the transmitter using the BNC connections for composite or component sources. S-video can be connected using either the BNC connectors or the 4-pin mini DIN. (See the figure at right and page 2-11).
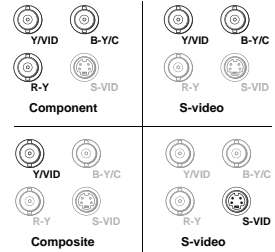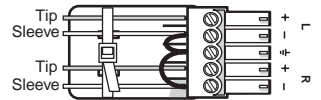
Step 3

Connect balanced or unbalanced, stereo or mono audio input to the transmitter using the 5 pole, 3.5 mm captive screw connector. (See the figure at right and page 2-12).
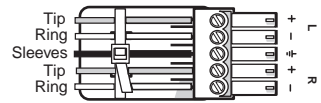
Balanced Audio

Step 4

If required, connect an alarm system to the transmitter's 2 pole captive screw connector. (See page 2-13).

Unbalanced Audio

Step 5

Connect the fiber optic cables to the port on the rear of the transmitter (see the figure at right and page 2-14). Link 1 is essential for video, audio, and RS-232 signals. Link 2 is required when using RS-232 commands for complete system configuration.
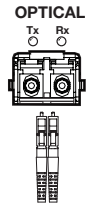
Step 6

To configure the transmitter and receiver using RS-232 commands, connect the control device to the three right poles (⏚,Tx, and Rx), labeled RS-232 Remote, on the RS-232 captive screw connector of the transmitter (see the figure at right and page 3-3). Alternatively, the host device can be connected through the front panel Config port (see page 3-2) or the corresponding ports on the receiver (see step 13). These ports may also be used to configure the system with the FOX Extender Windows Control Program.
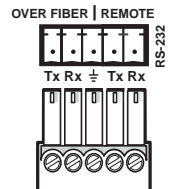
Step 7

To pass through RS-232 commands to remote devices, independently of the FOX 2G Tx/Rx AV, use the three left poles (Tx, Rx, and ⏚), labeled RS-232 Over Fiber. The ground is common for both sets of RS-232 signals. (See the figure above right and page 3-3).

Quick Start Guide — FOX 2G Tx/Rx AV, cont'd

Step 8

Connect the 12 VDC power supply to the transmitter's 2 pole captive screw connector (see page 2-10). Do not switch on the power supply.

Step 9

Connect the receiver to a low resolution video display using either the BNC connectors (component, S-video, or composite) or the 4-pin mini DIN (S-video only), as shown in the figure at right and page 2-11.

Component   S-video
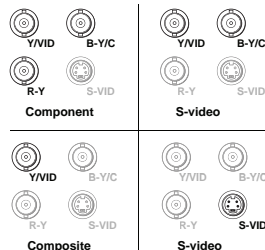
Step 10

Connect the receiver's audio output to a sound system, using the 5 pole, 3.5 mm captive screw connector (see page 2-12).

Composite   S-video

Step 11

If required, connect an alarm system to the receiver's 2 pole captive screw connector (see page 2-13).

Step 12

Connect the fiber optic cable(s) from the transmitter to the back of the receiver (see the figure at right and page 2-14). Link 1 is essential for transmission of video, audio, and control signals from the transmitter to the receiver. Link 2 is optional, but two-way communication from the Tx port of the receiver is required to fully configure the system using RS-232 commands or FOX Extender Windows Control Program.

OPTICAL

Tx   Rx

Link 2 may be connected to another receiver in a daisy chain. In that case, there is no return link to the transmitter (see page 2-15).

Step 13

Connect the RS-232 control device to this 5 pole captive screw connector or the front panel Config port. These ports are an alternative to the transmitter ports (see steps 6 and 7 and page 3-2).

> **NOTE**   *If the RS-232 control device is connected to the receiver, fiber optic Link 2 is required to configure the transmitter.*

Step 14

Connect the 12 VDC power supply to the receiver's 2 pole captive screw connector (see page 2-10).

Step 15

Power up all devices and configure the system using the Simple Instruction Set (SIS) commands (see page 3-5) or FOX Extender Windows Control Program (see page 3-15).

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All trademarks mentioned in this manual are the properties of their respective owners.

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Chapter One

Introduction

About this Manual

About the FOX 2G Tx/Rx AV

FOX 2G Tx/Rx AV Features

FOX 2G Tx/Rx AV Application Diagram

Introduction

About this Manual

This manual contains information about the FOX 2G Tx/Rx AV family of signal transmitters and receivers, with information on how to mount, install and operate these units.

In this manual, unless otherwise specified, the term FOX 2G Tx/Rx AV refers to the features or operation of all four units. The term transmitter refers to both the multi-mode (MM) and single mode (SM) transmitters and the receiver refers to both the MM and SM receivers.

About the FOX 2G Tx/Rx AV

The FOX 2G Tx AV and FOX 2G Rx AV are a high performance, low resolution video, audio, and data (RS-232) transmitter (Tx) and receiver (Rx) pairs. Signals are transmitted over fiber optic cable at rates up to 2 Gbps.

There are four different units:

- FOX 2G Tx AV MM
- FOX 2G Tx AV SM
- FOX 2G Rx AV MM
- FOX 2G Rx AV SM

The MM models have 850 nm multimode small form-factor pluggable (SFP) modules and carry signals up to 500 m (1640'). The SM models have 1310 nm single mode SFP modules and carry signals up to 30 km (18 miles). The transmitter is connected to the receiver using the appropriate fiber optic cable (SM or MM).

NOTE *The transmitter and receiver must be compatible. Both must be MM or both must be SM. It is not possible to mix types.*

WARNING *The FOX 2G Tx/Rx AV outputs continuous invisible light (Class 1 rated), which may be harmful and dangerous to the eyes; use with caution.*

Do not look *into the rear panel fiber optic cable connectors or into the fiber optic cables themselves.*

Plug the attached dust caps into the optical transceivers when the fiber optic cable is unplugged.

These low resolution FOX 2G video units are not compatible with the Extron FOX 500 RGB series, the FOX 500 DVI, the FOX 500 DA6, or the FOX HD-SDI products. However, they are compatible with the Extron Fiber Matrix units.

FOX 2G Tx/Rx AV Features

Digitized signal transmission — Ensures perfect image quality. The non-linearity of the fiber components does not affect signal quality. Light can be distributed and repeated without signal degradation or compression.

Long distance transmission — Signals may be transmitted up to 500 m (1,640 feet) over multi-mode (MM) fiber or up to 30 km (18 miles) over single mode (SM) fiber.

Daisy chain capability — The system can be expanded to provide output for up to ten display devices.

Integration friendly — A variety of connectors permits input and output of composite, S-video, or component video signals. Compatibility with the Extron Fiber Matrix allows the units to be integrated into more complex A/V systems.

Transmits multiple signal types — Video, audio and data signals can all be transmitted simultaneously over one fiber. The units transmit composite, S-Video, or component video signals and are compatible with NTSC, PAL, and SECAM standards.

All digital, zero compression technology — The FOX 2G AV delivers uncompressed pixel-for-pixel transmission of video signals to ensure optimal image quality.

Auto Input Format Detection — The FOX 2G AV transmitter can be set to detect the incoming video signal format, automatically reconfiguring itself to transmit the signal. This feature can reduce the number of required outputs for a matrix switcher, lowering system cost while improving manageability.

Encoding and decoding — The FOX 2G Tx AV converts incoming signals to a proprietary format that is passed along the fiber optic cable to the FOX 2G Rx AV. At the other end of the cable, the receiver converts the signal to the low resolution format that matches the needs of the display device.

Output Video Formatting — The user can set the output video signal format (composite, S-Video, or component) or follow the format of the source device (video follow).

Picture and audio adjustments — Available picture adjustments include color, tint, contrast, and brightness. Audio adjustments include input gain and attenuation, and output level. Both audio and video can be muted.

Troubleshooting features — A variety of LED signals and indicators allow easy diagnosis of problems.

Easy configuration — The units can be configured using Extron's Special Instruction Set (SIS™) or the FOX Extender Windows Control Program.

FOX 2G Tx/Rx AV Application Diagram
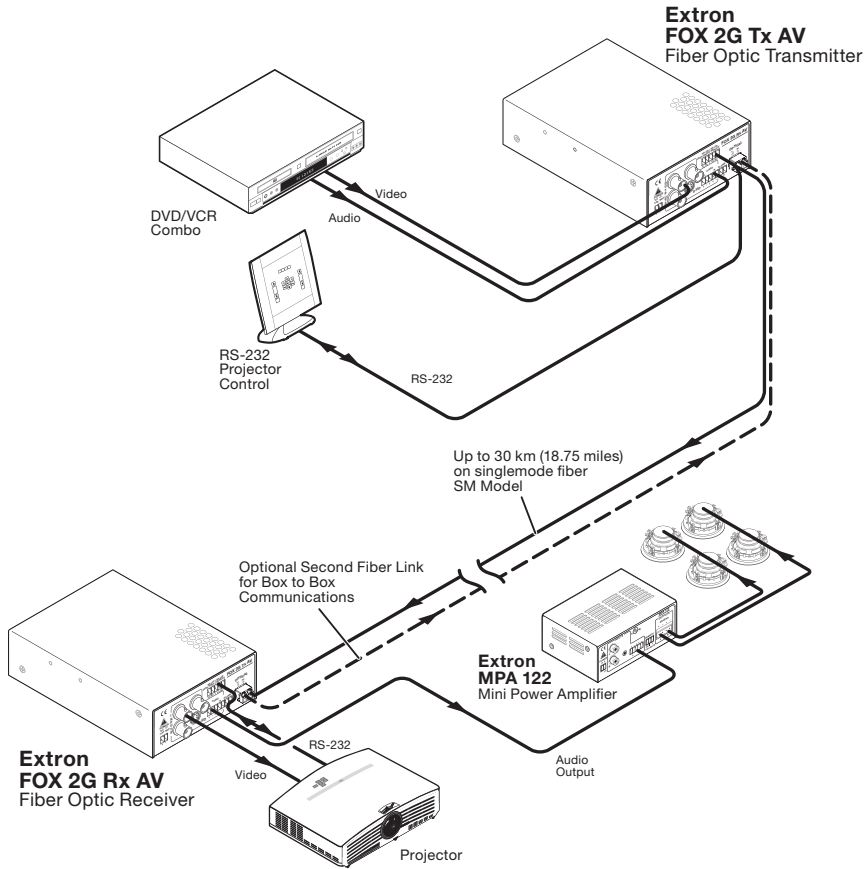
Figure 1-1 — Typical Application for FOX 2G Tx/Rx Av

2

Chapter Two

Installation and Setup

Mounting the FOX 2G Tx/Rx AV

Front Panel Features

Rear Panel Features

Operation

Installation and Setup

Mounting the FOX 2G Tx/Rx AV

The 1U high, quarter rack wide units can be placed on a tabletop, mounted in a rack, or mounted under or through a desk or other furniture. In addition, the receiver can be mounted close to a projector, using the Extron PMK 350 (PN **70-563-0x**).

Tabletop placement

Attach the four included rubber feet to the bottom of the unit and place it in any convenient location.

Rack Mounting

UL guidelines for rack mounting

The following Underwriters Laboratories (UL) guidelines are relevant to the safe installation of the FOX 2G Tx/Rx AV in a rack:

1. **Elevated operating ambient temperature —** If the unit is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install the equipment in an environment compatible with the maximum ambient temperature (Tma: +122 °F, +50 ° C) specified by Extron.

2. **Reduced air flow —** Install the equipment in the rack so that the equipment gets adequate air flow for safe operation.

3. **Mechanical loading —** Mount the equipment in the rack so that uneven mechanical loading does not create a hazardous condition.

4. **Circuit overloading —** Connect the equipment to the supply circuit and consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Give appropriate consideration to the equipment nameplate ratings when addressing this concern.

5. **Reliable earthing (grounding) —** Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (such as the use of power strips).

Rack mounting procedures

The units can be mounted in the front or rear of the:

- RSU 126 (6" deep, 1U rack shelf kit: PN **60-190-10**)
- RSB 126 (6" deep, 1U basic rack shelf: PN **60-604-10**)
- RSU 129 (9.5" deep, 1U rack shelf kit: PN **60-190-01**)
- RSB 129 (9.5" deep, 1U basic rack shelf: PN **60-604-01**)

To mount the units, follow these instructions:

1. Remove the rubber feet if these have been installed on the bottom of the unit.

2. Align the unit on the shelf and secure it to the shelf with two 4-40 x 3/16" screws in diagonally opposite corners (see figure 2-1 below).

3. Install false faceplate(s) or other unit(s) to the rack shelf.

4. Attach the shelf to the rack with the four provided 10-32 x 3/4" bolts.
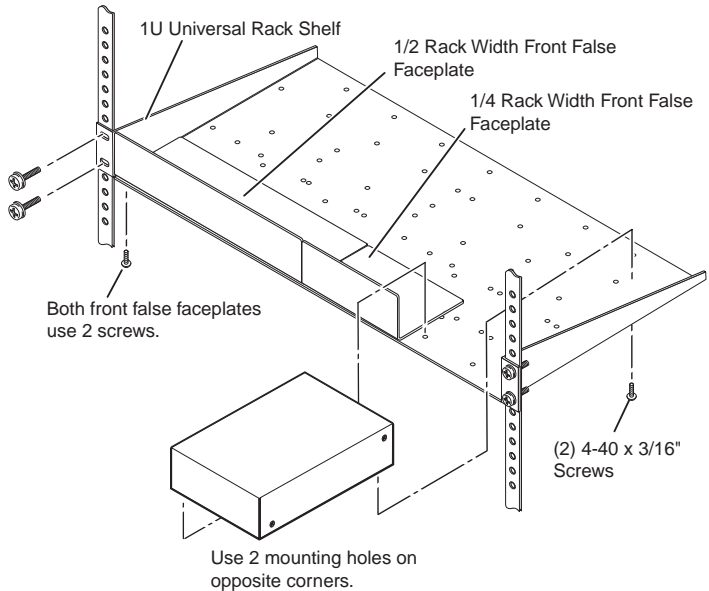
Figure 2-1 — Rack mounting

Under-desk mounting

Mount the FOX 2G Tx/Rx AV under a desk or podium using the optional Extron MBU 125 under desk mounting kit (PN **70-077-01**) as follows:

1. Remove the rubber feet if these have been installed on the bottom of the unit.

2. Secure the mounting brackets to the transmitter or receiver, using the four 4-40 screws provided (see figure 2-2 below).
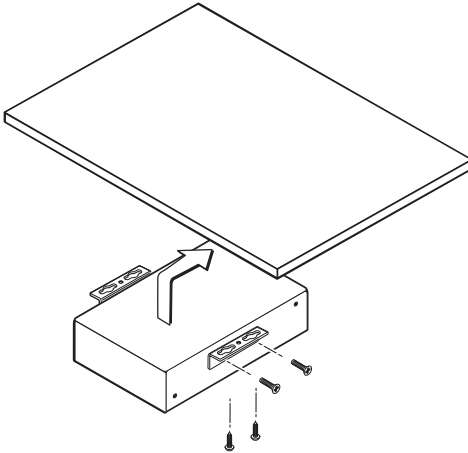
Figure 2-2 — Under-desk mounting

3. Hold the unit with the brackets attached against the underside of the table or other furniture. Mark the location of the screw holes of the bracket on the mounting surface.

4. Drill four pilot holes, each 3/32" (2 mm) in diameter by 1/4" (6.3 mm) deep in the mounting surface at the marked screw locations.

5. Insert #8 wood screws into the four pilot holes. Tighten each screw into the mounting surface until just less than 1/4" (6.3 mm) of the screw head protrudes.

6. Guide the mounting screws through the slots in the brackets and place the unit tight against the surface.

7. Slide the unit slightly in or out so that the screws are seated in the narrowest part of the mounting bracket slots; tighten all four screws to secure the unit in place (see the figure above).

Through-desk mounting

Mount the FOX 2G Tx/Rx AV through a desk or podium using the optional Extron MBD 129 through-desk mounting kit (PN **70-077-02**) as follows:

1. Remove the rubber feet if these have been installed on the bottom of the unit.

2. Attach the brackets to the transmitter or receiver, using the four 4-40 screws provided; leave the screws slightly loose.
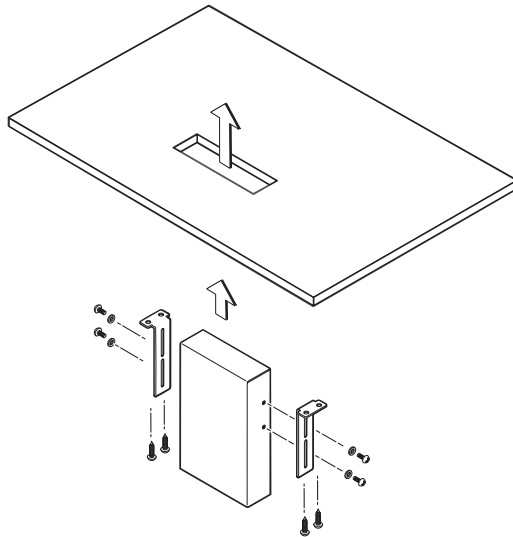
Figure 2-3 — Through-desk mounting

3. Hold the unit in position, under the mounting surface. Mark the location of the four screw holes and the mounting hole to be cut in the table.

4. Remove the table material. Test the fit by inserting the front of the device through the hole. If necessary, use a rasp or coarse file to enlarge the hole.

5. Drill four pilot holes, each 3/32" (2 mm) in diameter by 1/4" deep (6.3 mm) deep, as marked on the template.

6. Attach the brackets to the mounting surface, using the four #8 wood screws provided with the kit.

7. Slide the device in or out until the front panel is flush with the table surface. Tighten the screws installed in step **2**.

8. If the screws are inaccessible to a screwdriver, mark the location of the unit relative to the bracket, remove the unit and bracket, tighten the screws and replace the unit as described in step **6**.

Installation and Setup, cont'd

Projector mounting

Mount the FOX 2G Rx AV above a projector using an optional Extron Projector Mounting Kit. The following intructions apply to the PMK 350 (PN **70-563-0x**). To use other projector mounting kits, consult the appropriate manual. Mount the receiver on the PMK 350 as follows:

1. Remove and retain the four screws holding the front and back panels of the PMK 350.

2. Remove the cover sheet.

3. Remove the rubber feet if these have been installed on the bottom of the FOX 2G Rx AV.

4. Secure the receiver to the mounting tray, using two of the 4-40 x 3/16" screws provided with the PMK 350 in diagonally opposite corners of the receiver.

5. Mount the power supply, using the provided plastic ties or Velcro® strips (see figure 2-4 below).
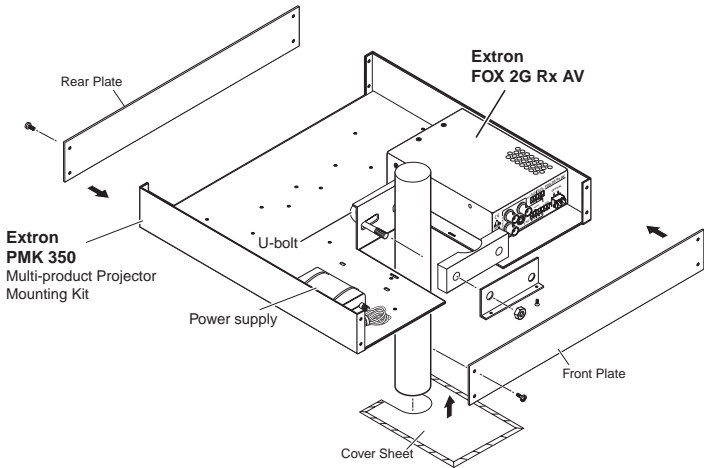
Figure 2-4 — Projector mounting

6. Add any other unit(s), as required.

7. Place the PMK 350 around the projector ceiling mounting pole.

8. Pass the two legs of the U-bolt through the slotted holes in the back of the mounting plate, around the mounting pole, through the holes in the rubber contoured base, and through the holes in the L bracket (see figure 2-5 below).
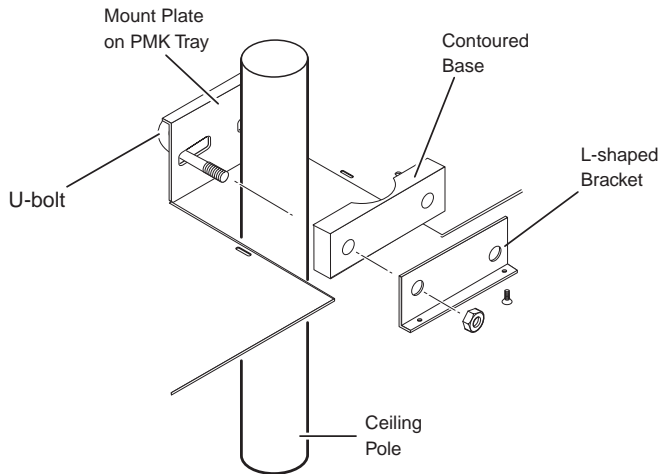
Figure 2-5 — U-bolt attachment

9. Align the two small holes in the bottom of the L-shaped bracket with the holes in the PMK 350 base plate. Insert and tighten the two provided 6-32 x 5/16" screws. Leave the screws slightly loose so that the bracket can still be adjusted.

10. Place the hex nuts on both ends of the U-bolt and hand-tighten them.

11. Make the necessary cable connections to the FOX 2G Rx AV, the power supply, and any other units.

12. Slide the PMK 350 along the pole to its final position and tighten the hex nuts, using a socket wrench.

12. Tighten the screws holding the L-bracket to the PMK 350 base plate.

13. Reattach the cover sheet (see figure 2-4).

14. Reattach and secure the front and back panels, using the screws retained in step **1**.

Front Panel Features

The illustration below shows the front panel features of the
FOX 2G Tx AV (top) and FOX 2G Rx AV (bottom):
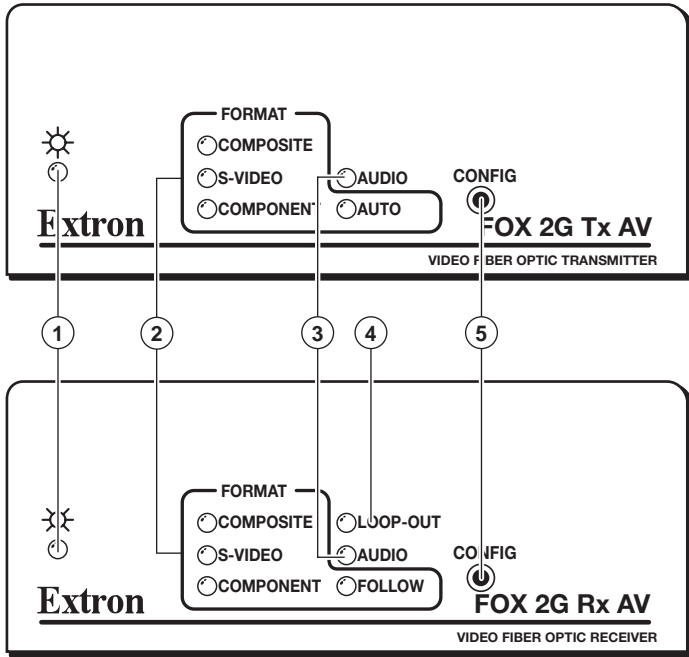
Figure 2-6 — FOX 2G Tx/Rx AV front panel features

① **Power LED —** This green light is on when the unit is receiving
power.

② **Video Format LEDs —** These lights show signal presence
and type. The transimtter indicates Composite, S-Video,
Component, and Auto. The receiver indicates Composite,
S-Video, Component, and Follow.

③ **Audio LED —** Lights when the transmitter detects an audio
signal at or above 35 dB below the nominal level. Stays on until
the signal falls below this threshold continuously for 10 seconds.

④ **Loop-Out LED —** This LED is only on the receiver and indicates
that the unit is in the Daisy Chain mode.

⑤ **Config Port —** This 2.5 mm mini jack connector is an alternative
to the rear panel RS-232 connections for configuring the units,
using SIS commands or FOX Extender Windows Control
Program (see Chapter 3).

Rear Panel Features

The illustration below shows the rear panel features of the FOX 2G Tx AV (top) and FOX 2G Rx AV (bottom):
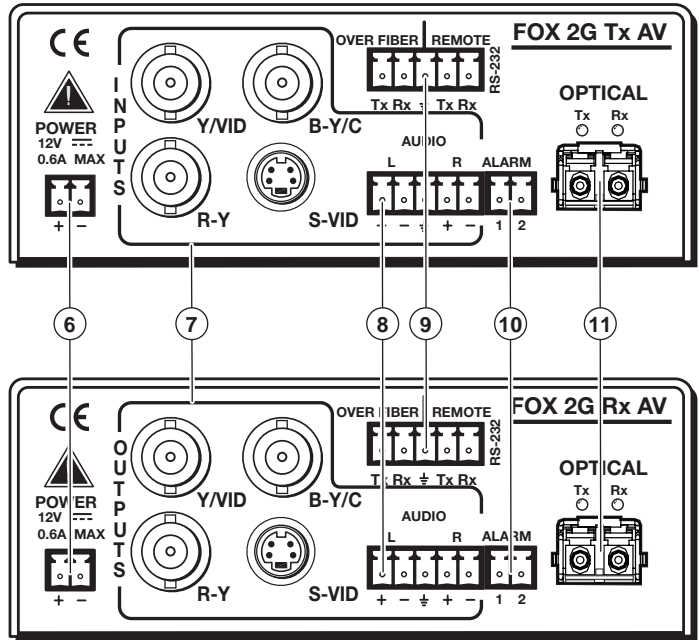
Figure 2-7 — FOX 2G Tx/Rx AV rear panel features

6   **Power input —** This 3.5 mm, 2-pole captive screw connector accepts 12 VDC from an external power supply (provided).

7   **Video connections —** Three BNC connectors and one 4-pin mini DIN S-video connector for video input and output.

8   **Audio connections —** A 3.5 mm, 5-pole captive screw connector for audio input and output.

9   **RS-232 connections —** The Remote RS-232 connections allow the units to be configured using SIS commands or the FOX Extender Windows Control Program. The Over Fiber RS-232 connections allow pass-through to remote units.

10   **Alarm —** When connected to an alarm, this 3.5 mm 2-pole captive screw connector gives a warning when light signals have been disconnected, lost, or broken.

11   **Fiber Optic Cable connector —** An LC duplex SFP connector links the transmitter and receiver. An LED above each port lights when a signal is received.

Operation

Power Input

1. Connect the captive screw connector from the supplied 12 VDC power supply into the power receptacle.

   NOTE *The FOX 2G Tx/Rx AV does not have a remote powering feature. Both the transmitter and the receiver require their own separate power supply.*
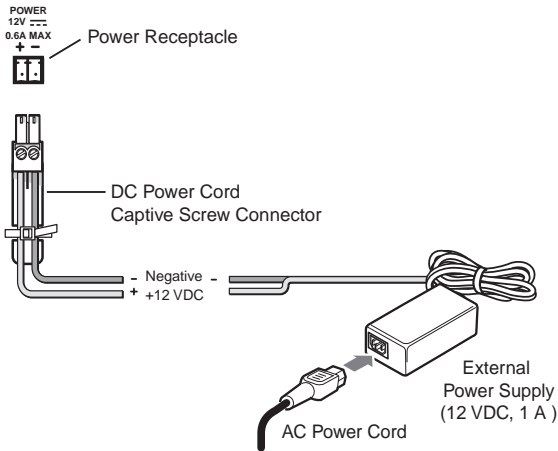
Figure 2-8 — Connecting power

   NOTE *The length of the exposed wires in the stripping process is critical. The ideal length is 3/16" (5 mm). Any longer and the exposed wires may touch, causing a short circuit between them. Any shorter and the wires can be easily pulled out even if tightly fastened by the captive screws.*

   CAUTION *Do not tin the wires. Tinned wire does not hold its shape and can become loose over time.*

2. Connect the AC power cord of the power supply unit to a 110 or 220 VAC electrical source.

Video Connections

The FOX 2G Tx/Rx AV accepts a single low resolution video signal (composite, S-video and low resolution component video) and outputs a single low resolution video signal (composite, S-video and low resolution component video). It is not compatible with RGB or HDTV 480p, 720p, or 1080i component video signals.

The transmitter converts incoming signals to a proprietary format and passes them along the fiber optic cable to the FOX 2G Rx AV. The receiver converts the signal to a format that matches the display requirements. SIS™ commands are used to configure the receiver to convert between signal formats (see page 3-10).

To input a low resolution component signal, or output a component output signal, connect three BNC male connectors to the Y/VID, B-Y/C, and R-Y receptacles on the back panel of the unit.

There are two alternative methods to input or output an S-video signal:

- Connect BNC male connectors to the Y/VID and B-Y/C receptacles on the back panel of the unit.
- Connect a 4-pin mini DIN to the S-VID receptacle on the back panel of the unit.

NOTE   *In addition to the selected output type, using BNC connectors, a transcoded S-video signal is always output from the receiver's S-VID socket.*

To input or output a composite signal, use a single BNC male connector to the Y/VID receptacle on the back panel of the unit.

When both the BNC connectors and the 4-pin mini DIN provide simultaneous video input, the signal with the highest priority for video output is highlighted in the table below:

BNC Input	Mini DIN Input
Component	S-Video
S-Video	S-Video
Composite	S-Video
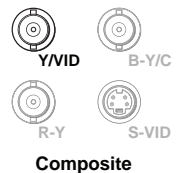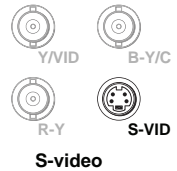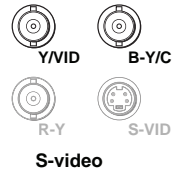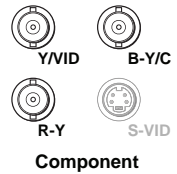
Audio Connections

Audio input to the FOX 2G Tx AV and audio output from the
FOX 2G Rx AV are made through the 3.5 mm, 5-pole, captive
screw connectors. Input and output can be mono or stereo
and can be balanced or unbalanced, depending on the wiring
connections (see figure below).

Do not tin the wires!

Balanced Audio   **Unbalanced Audio**
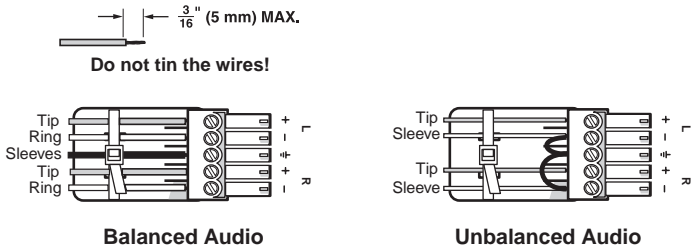
Figure 2-9 — Audio connections

| NOTE | *The length of the exposed wires in the stripping process is critical. The ideal length is 3/16" (5 mm). Any longer and the exposed wires may touch, causing a short circuit between them. Any shorter and the wires can be easily pulled out even if tightly fastened by the captive screws.*

| CAUTION | *Do not tin the wires. Tinned wire does not hold its shape and can become loose over time.*

The table below shows the initial gain differences between audio
input/output connectors, using captive screw connectors. The
unbalanced output from the captive screw connector will be half
(-6 dB), regardless of input.

Input	Output	Gain
Balanced	Balanced	0 dB (unity)
Balanced	Unbalanced	-6 dB (half)
Unbalanced	Balanced	0 dB
Unbalanced	Unbalanced	-6 dB

Additional adjustment of audio gain/attenuation can be made
using SIS commands (see page 3-8).

| NOTE | *The Audio LED lights up immediately when the transmitter detects an audio signal 35 dB below the nominal level. It remains lit until the audio signal drops below that threshold continuously for 10 seconds.*

Alarm

ALARM

1 2

The alarm pins, labeled 1 and 2, (see figure at right) on the rear panel of the FOX 2G Tx/Rx AV act as a short when activated. They do not produce any discrete on/off voltage signals but, instead, act as an internal relay that will either connect or disconnect an external alarm circuit.

For the FOX 2G Tx AV, the alarm state is activated when link 2 is absent. For the FOX 2G Rx AV, the alarm state is activated when link 1 is absent.

When power is lost, both the alarm state is activated for both units.

NOTE   *The length of the exposed wires in the stripping process is critical. The ideal length is 3/16" (5 mm). Any longer and the exposed wires may touch, causing a short circuit between them. Any shorter and the wires can be easily pulled out even if tightly fastened by the captive screws.*

CAUTION   *Do not tin the wires. Tinned wire does not hold its shape and can become loose over time.*
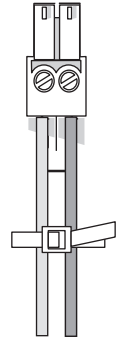
Fiber Optic Cable Connector

The transmitter and receiver units of the
FOX 2G Tx/Rx AV are connected by an LC duplex
SFP connector. Fiber optic link 1 connects the Tx port
of the transmitter and the Rx port of the receiver. It
carries video, audio and/or data output from the
transmitter to the receiver.

Fiber optic link 2 connects the Tx port of the receiver
with the Rx port of the transmitter. It only carries the
responses to RS-232 commands and is not required for
transmitting video and audio signals.

However, if link 2 is not enabled, the ability to
configure the system through SIS commands is limited
by the lack of communication from the receiver to
the transmitter. All commands issued through the
transmitter are valid but responses to status queries
may return invalid data.

Signals may be transmitted 500 m (1,640 feet) over multi-mode
(MM) fiber and 30 km (18 miles) over single mode fiber. An MM
transmitter must always be connected to a MM receiver and an
SM transmitter can only be connected to a SM receiver.

WARNING   *The FOX 2G Tx/Rx AV outputs continuous
invisible light (Class 1 rated), which may be
harmful and dangerous to the eyes; use with
caution.*

*__Do not look__ into the rear panel fiber optic cable
connectors or into the fiber optic cables themselves.*

*Plug the attached dust caps into the optical
transceivers when the fiber optic cable is unplugged.*

An LED above each port lights when a signal is received. The
receiver unit's optical Rx port will light when a signal from fiber
link 1 reaches the receiver. The transmitter unit's optical Rx port
will light when a signal from link 2 reaches the transmitter.
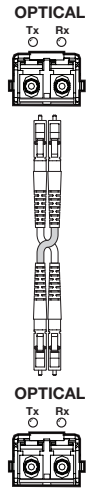
Daisy Chain Capability

FOX 2G Rx AV receivers have a loop-out mode that allows a signal to be passed from the receiver along a daisy chain of to up to ten receivers, with a display device attached to each receiver. The loop-out mode is set using RS-232 commands. For more information, see chapter 3, *"Simple Instruction Set (SIS) Commands"*.

All receivers in the daisy chain must be compatible, i.e. they must all be SM or all be MM models, connected with the appropriate fiber optic cable. Each receiver receives a signal at its Rx fiber optic port and passes the signal to the next unit through its Tx port.

| NOTE | *In daisy chain mode, the Tx port is used to pass audio and video signals to the next receiver in the daisy chain. As a result, the Tx port is not available for bidirectional communication and there are limitations on system configuration with SIS commands.* |

| NOTE | *When multiple receivers are in daisy chain mode, RS-232 commands issued through the transmitter will be passed to every receiver but commands issued through a receiver will apply only to that receiver. Configuring each receiver independently, matches each output signal to the unique needs of the display device.* |
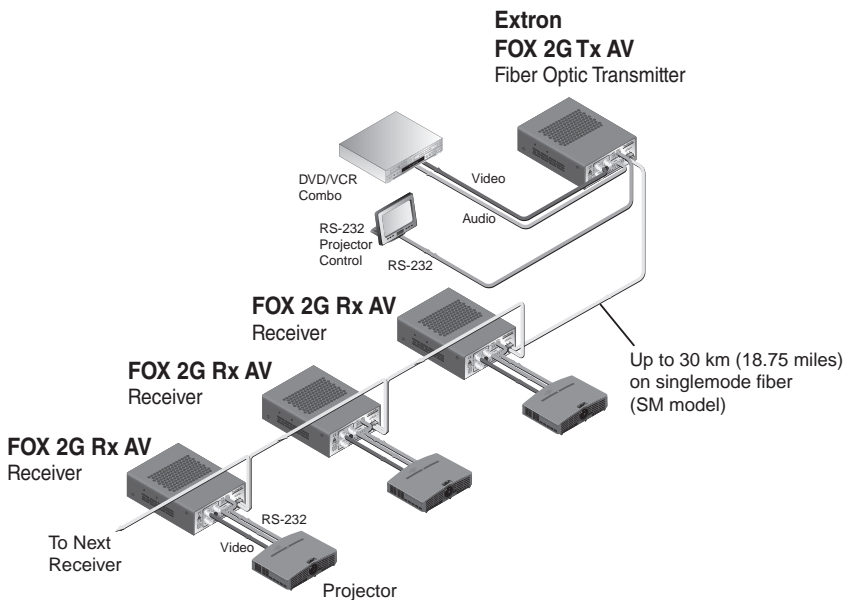
Figure 2-10 — Daisy Chain Mode

3

Chapter Three

Configuration

RS-232 Ports

RS-232 Control of Tx and Rx Units

Simple Instruction Set (SIS) Commands

Command/Response Table for SIS Commands

Windows®-Based Control Program

Configuration

RS-232 Ports

Both the FOX 2G Tx AV and FOX 2G Rx AV have a front panel TRS port and a rear panel captive screw port, which can provide SIS commands to configure the tranmitter/receiver settings when connected to a control device.

SIS commands for the FOX 2G Tx/Rx AV are shown (starting on page 3-8).

NOTE *The two comm ports work in parallel. However, depending on the computer or the communication settings, connecting to both comm ports at once may result in one or both ports not working. Extron recommends that only one comm port (front or back) is used at a time.*

The protocol for both ports is 9600 baud, no parity, 8 data bits, 1 stop bit, and no flow control.

NOTE *Both RS-232 Remote and RS-232 Over Fiber signals require fiber optic link 1 and link 2 for full functionality (see page 3-4).*

The front panel Config port uses a 2.5 mm mini jack connector.

Tip
Ring
Sleeve (Gnd)
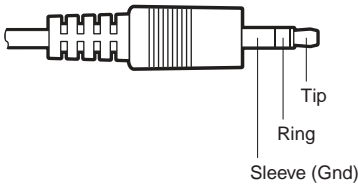
2.5 mm TRS connector

Pin	TRS	Function
T_x	Tip	Transmit data
R_x	Ring	Receive data
⏚	Sleeve	Signal ground

Figure 3-1 — Front panel RS-232 port

As an alternative to the front panel TRS port, the RS-232 Remote port, on the rear panel, uses three connectors in a 5-pole captive screw connector.
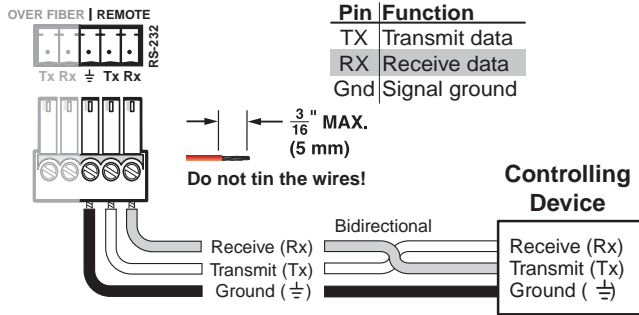
Figure 3-2 — Rear panel RS-232 REMOTE port

In addition, on the rear panel, the units have RS-232 Over Fiber pass-through ports. These ports allow RS-232 commands to be passed from the control device to remote devices over the fiber optic cable with speeds up to 115 kbps.

NOTE   *The FOX 2G Tx/Rx AV will not respond to, or generate a response to, any commands passed through the "RS-232 Over Fiber" ports. Refer to the user's manual of the device being controlled for the appropriate SIS commands.*
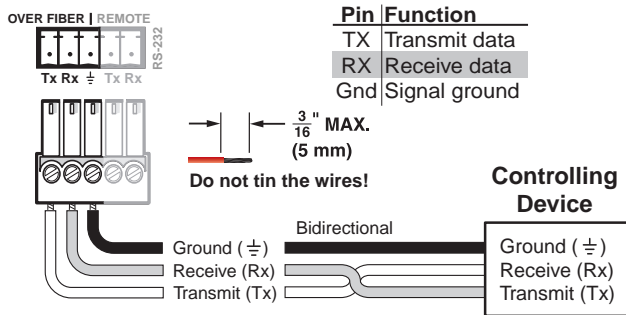
Figure 3-3 — Captive screw connection for rear panel RS-232 OVER FIBER port

RS-232 Control of Tx and Rx Units

When the FOX 2G Tx/Rx AV is configured by RS-232 commands, some commands are processed by the transmitter and others are processed by the receiver. The SIS commands do not distinguish between the two units. The system routes the commands based on where they are processed.

A system block diagram showing which functions are processed by the transmitter and which are processed by the receiver is shown below:

```
                        Fiber Link 1
  ┌──────────────┐  ────────────────►  ┌──────────────┐
  │              │                      │              │
  │ Transmitter  │   Fiber Link 2       │  Receiver    │
  │              │  ◄────────────────   │              │
  └──────────────┘    (optional)        └──────────────┘

Process                              Process
Input configuration                  Color
Audio gain                           Tint
                                     Brightness
                                     Contrast
                                     Video mute
                                     Output configuration
                                     Daisy chain/
                                         loop out mode
                                     Audio mute
                                     Audio output level
```
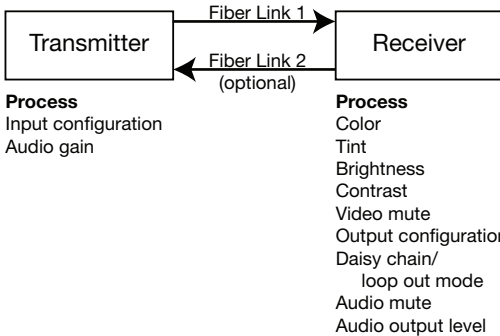
Figure 3-4 — System block diagram

For full functionality, both fiber optic links must be enabled. If only Link 1 is enabled, the ability to configure the system through SIS commands is limited by the lack of return communication from the receiver to the transmitter:

- All configuration carried out using the transmitter will be processed normally because only fiber Link 1 is required.

- Queries from the transmitter about the status of receiver settings will not be processed correctly because fiber Link 2 is required to carry the return signal.

- The receiver cannot be used to configure the transmitter because fiber Link 2 is required.

The lack of communication between the transmitter and the receiver can result in mismatches in the value settings of the two units, which may cause confusion with control systems or software applications. To avoid this confusion, within four seconds of Link 2 becoming active, the receiver settings are automatically copied to the transmitter to ensure settings for both units match.

NOTE   *When the receiver settings are copied to the transmitter, existing transmitter settings are overwritten and it may be necessary to update those values.*

Simple Instruction Set (SIS™) Commands

Introduction to SIS

SIS commands consist of a string (one or more characters per command field). For the FOX 2G Tx/Rx AV, apart from setting audio gain ("G") and attenuation ("g"), upper and lower case characters may be used interchangeably. Commands do not require any special characters to begin or end the command string. Each response from the unit ends with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string.

When the FOX 2G Tx/Rx AV unit is first switched on, depending on the model, it sends one of the following messages:

© Copyright 2008, Extron Electronics, FOX 2G Tx AV, Vx.xx, 60-941-11↵ or

© Copyright 2008, Extron Electronics, FOX 2G Tx AV, Vx.xx, 60-941-12↵ or

© Copyright 2008, Extron Electronics, FOX 2G Rx AV, Vx.xx, 60-941-21↵

© Copyright 2008, Extron Electronics, FOX 2G Rx AV, Vx.xx, 60-941-22↵

where V x.xx is the firmware version number and 60-941-*xx* is the product catalog number.

Configuration, cont'd

Symbols used in this manual

When programming in the field, certain characters are most conveniently represented by the hexadecimal equivalent of their ASCII value. For convenience, the table below shows the hexadecimal equivalent of each ASCII command:

ASCII to HEX Conversion Table							Esc 1B	CR ØD	LF ØA
Space 2Ø	! 21	" 22	# 23	$ 24	% 25	& 26	' 27
(28	) 29	* 2A	+ 2B	, 2C	- 2D	. 2E	/ 2F
Ø 3Ø	1 31	2 32	3 33	4 34	5 35	6 36	7 37
8 38	9 39	: 3A	; 3B	< 3C	= 3D	> 3E	? 3F
@ 4Ø	A 41	B 42	C 43	D 44	E 45	F 46	G 47
H 48	I 49	J 4A	K 4B	L 4C	M 4D	N 4E	O 4F
P 5Ø	Q 51	R 52	S 53	T 54	U 55	V 56	W 57
X 58	Y 59	Z 5A	[5B	\ 5C	] 5D	^ 5E	_ 5F
` 6Ø	a 61	b 62	c 63	d 64	e 65	f 66	g 67
h 68	i 69	j 6A	k 6B	l 6C	m 6D	n 6E	o 6F
p 7Ø	q 71	r 72	s 73	t 74	u 75	v 76	w 77
x 78	y 79	z 7A	{ 7B	l 7C	} 7D	~ 7E	DEL 7F

NOTE   *Apart from G (gain) and g (attenuation), upper and lower case characters can be used interchangeably in SIS commands for this product. For example, on page 3-8, either "C" or "c" can be used to set the color value.*

The symbols (⌧*n* values) defined in this section are the variables used in the fields of the command response table that begins on page 3-8.

↵ — carriage return with line feed

← — carriage return (no line feed)

• — space character

[Esc] — Escape key

⌧1 — Input video type

    0 = Auto

    4 = Component

    5 = S-video

    6 = Composite

⌧2 — Color, tint, contrast, or brightness adjustment (0 to 127)

⌧3 — Auto Memory, blanking, or audio mute status

    0 = disabled

    1 = enabled

$\boxed{\text{X4}}$ — Output video type

    0 = Follow input type

    6 = Component

    7 = S-video

    8 = Composite

$\boxed{\text{X5}}$ — Audio gain (0 to 10)

$\boxed{\text{X6}}$ — Audio attenuation (-18 to 0)

$\boxed{\text{X7}}$ — Audio level (-18 to +10)

$\boxed{\text{X8}}$ — Audio output level

    0 = Consumer level (-10 dBV) (default)

    1 = Professional level (+4 dBu)

$\boxed{\text{X9}}$ — Test pattern

    0 = Test pattern off

    1 = Color bars

    2 = Grayscale

    3 = Alternating pixels

$\boxed{\text{X10}}$ — Link #2 transmission status

    0 = disables link #2

    1 = enables link #2 from receiver back to transmitter

    2 = enables daisy chain mode on receiver

$\boxed{\text{X11}}$ — SM (single mode) or MM (multimode)

$\boxed{\text{X12}}$ — Tx (transmitter) or Rx (receiver)

$\boxed{\text{X13}}$ — Memory presets (1 to 30)

$\boxed{\text{X14}}$ — Internal temperature in degrees Fahrenheit and Celsius:

    (xxxF xxC)

Error messages

    E10 — Invalid command

    E13 — Invalid parameter

    E14 — Not valid for this configuration

Command/Response Table for SIS Commands

Command	ASCII Command (host to unit)	Response (unit to host)	Additional description
Input video format			
Specify input setting	X1\	Typ X1 ↵	Sets format of input video signal (X1) 0 = Auto 4 = Component 5 = S-Video 6 = Composite
View current input setting	\	X1 ↵	Displays current input video format
Adjust color			
Specify color value	X2 C	Col X2 ↵	Sets color value for video signal (X2 from 0 to 127)
Increment color value	+C	Col X2 ↵	Increases color value by 1
Decrement color value	-C	Col X2 ↵	Decreases color value by 1
View current color value	C	X2 ↵	Displays current color value
Adjust tint			
Specify tint value	X2 T	Tin X2 ↵	Sets tint value for video signal (X2 from 0 to 127)
Increment tint value	+T	Tin X2 ↵	Increases tint value by 1
Decrement tint value	-T	Tin X2 ↵	Decreases tint value by 1
View current tint value	T	X2 ↵	Displays current tint value

Command	ASCII Command (host to unit)	Response (unit to host)	Additional description
Adjust contrast			
Specify contrast value	X2^	ConX2↵	Sets contrast value for video signal (X2 from 0 to 127)
Increment contrast value	+ ^	ConX2↵	Increases contrast value by 1
Decrement contrast value	- ^	ConX2↵	Decreases contrast value by 1
View current contrast value	^	X2↵	Displays current contrast value
Adjust brightness			
Specify brightness value	X2Y	BrtX2↵	Sets brightness value for video signal (X2 from 0 to 127)
Increment brightness value	+ Y	BrtX2↵	Increases brightness value by 1
Decrement brightness value	- Y	BrtX2↵	Decreases brightness value by 1
View current brightness value	Y	X2↵	Displays current brightness value
Video mute			
Enable blanking	1B	Blk1↵	Blanks selected input (X3) 0 = Disables blanking or mute 1 = Enables blanking or mute
Disable blanking	0B	Blk0↵	Displays selected input
View current blanking status	B	X3↵	Displays current blanking status

Command	ASCII Command (host to unit)	Response (unit to host)	Additional description
Output video format			
Specify output setting	6* X4 #	Syn X4 ⏎	Sets format of output video signal (X4) 0 = Follow input type 6 = Component 7 = S-Video 8 = Composite
View current output setting	6#	X4 ⏎	Displays current output video format
Memory Presets			
Recall Preset	X13 .	Rpr X13 ⏎	A period (.) follows X13 in the command. Recalls memory preset (X13) from 1 to 30
Save Preset	X13 ,	Spr X13 ⏎	A comma (,) follows X13 in the command. Saves memory preset (X13)
Audio mute			
Enable audio mute	1Z	Amt1 ⏎	Mutes audio (X3) 0 = Disables audio mute 1 = Enables audio mute
Disable audio mute	0Z	Amt0 ⏎	Un-mutes audio
View current audio mute status	Z	X3 ⏎	Displays current audio mute status
Audio gain and attenuation			
Specify gain value	X5 G	Aud X5 ⏎	Sets value of audio gain. **Upper case "G" only for configuring gain** (X5 from 0 to 10)
Specify attenuation value	X6 g	Aud X6 ⏎	Sets value of audio attenuation. **Lower case "g " only for configuring attenuation** (X6 from 0 to -18)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional description
Increment audio level	+G +g	Aud[X7]↵ Aud[X7]↵	Increases gain (G) or attenuation (g) by 1. Audio level adjustment range ([X7] from -18 to +10)
Decrement audio level	-G -g	Aud[X7]↵ Aud[X7]↵	Decreases gain (G) or attenuation (g) by 1
View current audio level	G g	Aud[X7]↵ Aud[X7]↵	Displays current value for gain (G) or attenuation (g)
Audio output level			
Set to consumer level	40*0#	Lvl0	Sets audio output to consumer level ([X8]) 0 = Consumer level (-10 dBV) — default 1 = Professional level (+4 dBu)
Set to professional level	40*1#	Lvl1	Sets audio output to professional level
View current output level status	40#	[X8]↵	Displays current audio output level
Auto Memory			
Disable Auto Memory	55*0#	Img0↵	Disables Auto Memory
Enable Auto Memory	55*1#	Img1↵	Enables Auto Memory
View current Auto Memory setting	55#	[X3]↵	View the current Auto Memory setting ([X3]) 0 = disabled; 1 = enabled

Command	ASCII Command (host to unit)	Response (unit to host)	Additional description
Auto Image			
Trigger	55*2#	Img⏎	Returns video adjustments (color, contrast, tint, and brightness) to default values (64)
Test Pattern			
Color bars	1J	Tst1⏎	Sets color bars test pattern on (X9) 0 = test pattern off 1 = color bars 2 = grayscale 3 = alternating pixels
Grayscale	2J	Tst2⏎	Sets grayscale test pattern on
Alternating pixels	3J	Tst3⏎	Sets alternating pixels test pattern on
Off	0J	Tst0⏎	Sets test pattern off
View current test pattern status	J	X9⏎	Displays current test pattern status
Link #2 Transmission			
Disable	66*0*0#	Rle*0*0⏎	Disables link #2 (X10) 0 = disables link #2 (receiver to transmitter) 1 = enables link #2 2 = enables receiver daisy chain mode
Enable	66*0*1#	Rle*0*0⏎	Enables link #2
Daisy chain	66*0*2#	Rle*0*0⏎	Enables receiver daisy chain mode
View current Link #2 status	66*0#	0*X10⏎	Displays current link #2 status This command will only be available on the reciever unit; the transmitter will respond with an E14 error code.

Command	ASCII Command (host to unit)	Response (unit to host)	Additional description
Information Request			
General information	I	1Link X3 •2Link X3 •Vid X3 •Aud X3 • X11 • X12 ↵	X3 Link #1: active signal present (1) or absent (0) • X3 Link #2: active signal present (1) or absent (0) • X3 video output signal enabled (1) or disabled (0) • X3 audio signal enabled (1) or disabled (0) • X11 SM or MM • X12 Tx or Rx
Query firmware (F/W) version	Q	x.xx ↵	Displays current F/W version
Query all F/W versions	0Q	x.xx-x.xx-x.xx-x.xx ↵	Diplays information about all F/W versions
Query Factory F/W version	32Q	x.xx ↵	Displays factory loaded F/W version
Query updated F/W version	34Q	x.xx ↵	Displays updated F/W version
Query factory FPGA version	33Q	x.xx ↵	Displays factory loaded Field Programable Gate Array (FPGA) version
Query updated FPGA version	35Q	x.xx ↵	Displays updated FPGA version
Query part number	N	60-941-zz ↵	Displays the unit's part number
Query other unit part number	1N	60-941-zz ↵	Displays the part number of other connected box.

Command	ASCII Command (host to unit)	Response (unit to host)	Additional description
Status Request			
View Link 1 Status	1S	X3 ↵	Displays Link 1 status (X3) 0 = active signal absent 1 = active signal present
View Link 2 Status	2S	X3 ↵	Displays Link 2 status
View input video status	3S	X3 ↵	Displays input video status
View input audio status	4S	X3 ↵	Displays input audio status
View internal temperature	20S	X14 ↵	Displays internal temperature in degrees F & C
Factory Defaults			
System Reset (factory default)	Esc ZXXX ←	Zpx ↵	Resets unit to all factory default values
Reset audio settings	Esc ZA ←	Zpa ↵	Resets all audio settings to factory default values
Reset presets	Esc ZG ←	Zpg ↵	Rests all memory presets to factory default values

Windows®-Based Program Control

The Extron FOX Extender Windows Control Program (WCP) communicates with the transmitter and receiver pair via the rear panel Remote RS-232 port or front panel Configuration port of either unit.

The program is compatible with Windows 2000, Windows XP and later versions of Windows. Upgrades to the program can be downloaded from the Extron Web site (www.extron.com).

Installing the software

The control program is on the CD-ROM that is provided with the transmitter and/or receiver. To install the program, insert the CD-ROM into the computer's drive. If the setup program does not start automatically, run Launch.exe from the CD and follow the instructions that appear on the screen.

By default, the Installer program will create a C:\Program Files\ Extron\Fox Extenders folder, containing the FOX Extender Windows control program. An icon may also be placed on the Windows desktop.

Starting the program

Start the Extron FOX Extender WCP as follows:

1. Set up and power on the units as described in Chapter 2. Connect the PC to one of the control ports on either the transmitter or receiver.

2. Click **Start** > **All Programs** > **Extron Electronics** > **FOX Extender WCP** > **FOX Extender WCP** or click on the desktop icon (see icon at right).

The Communication Setup window opens (see figure 3-5):

Figure 3-5 — Communication Setup window

3. Select the Com port to which your transmitter or receiver is connected and click **Connect**.

   The Communication Setup window closes and the FOX Extender WCP window comes into focus (see figure 3-6).
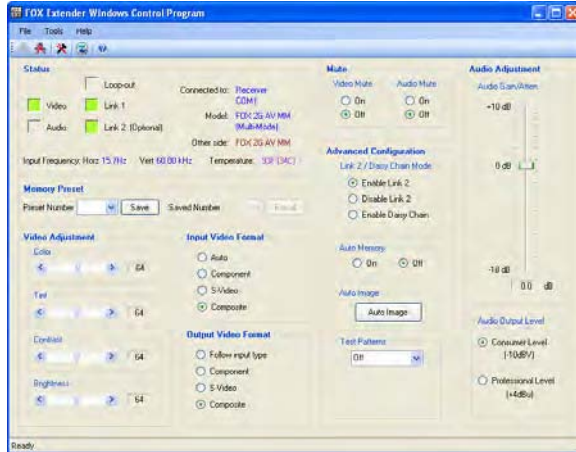
Figure 3-6 — FOX Extender WCP window

NOTE | *Only Link 1, connecting the Tx port of the transmitter to the Rx port of the receiver, is required for video, audio, and serial command transmission. Link 2 is not required but, if it is not enabled, the ability to configure the system is limited by a lack of communication from the receiver to the transmitter.*

Status area

The Status area provides visual indications of the connection status:

Figure 3-7 — Status area

- **Video present indicator —** Shows green to indicate the presence of Composite, S-Video, or Component video signals.

- **Audio present indicator —** Shows green when the transmitter detects an audio signal at or above 35 dB below the nominal level. Stays on until the signal falls below this threshold continuously for 10 seconds.

- **Loop-out indicator** — Only visible if the computer is connected to the receiver.

- **Link 1 indicator** — Shows green when the receiver detects light on Link 1 (connecting the Tx port of the transmitter to the Rx port of the receiver). The receiver reports the status to the transmitter over Link 2.

| NOTE | *If the computer is connected to either of the transmitter's control ports and Link 2 is disconnected, the Link 1 indicator will not show green because, when the receiver detects light on Link 1, it will not be able to pass that information to the transmitter.* |

- **Link 2 (Optional) indicator** — Shows green when the transmitter detects light on Link 2 (connecting the Tx port of the receiver to the Rx port of the transmitter). The transmitter reports the status to the receiver via Link 1.

The status area also shows the unit (the transmitter or receiver) to which the computer is connected, the unit at the other end of the fiber optic cable and the COM port on the computer that is connected to the unit.

It also provides information about the horizontal and vertical frequencies of the input signal.

Memory Preset area

The Memory Preset area provides tools to save and recall memory presets:
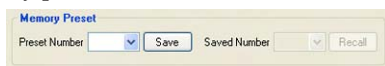
Figure 3-8 — Memory Preset area

Memory Presets save the values of color, tint, contrast, and brightness.

Mute area

The Mute area provides radio buttons that allow the video and/or audio to be muted.
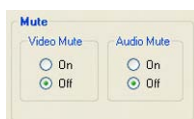
Figure 3-9 — Mute area

Video Adjustment area

The Video Adjustment area allows adjustments to the color, tint, contrast, and brightness of the picture that is displayed.

Figure 3-10 — Video Adjustment area

Video Format areas

The Video Format areas (Input Video Format and Output Video Format) provide radio buttons that allow the input format (auto, component, S-video, or composite) and output format (follow input type, component, S-video, or composite) to be selected.

Figure 3-11 — Video Format area

NOTE | *The transmitter converts the input signal into a proprietary signal type, which passes through Link 1 to the receiver. The receiver converts the signal back to the required signal type. This allows the input signal to be transcoded to meet the requirements of the output device.*

When Auto is selected for the input format, the transmitter will automatically detect the signal type. When follow input type is selected for the output format, the output signal will be in the same format as the original input signal.

Advanced Configuration area

Figure 3-12 — Advanced Configuration area

Link 2/Daisy Chain Mode — Provides radio buttons to choose the mode for the receiver's Tx port. If it is connected to the transmitter, the link may be enabled or disabled. Alternatively, the port may be connected to another receiver with the Daisy Chain mode enabled.

Auto Memory — May be switched on or off, using radio buttons. When Auto Memory is on, previously saved values such as color, tint, contrast, and brightness will be applied whenever the vertical field rate of the input changes.

Auto Image — Returns the video adjustment settings of color, tint, contrast, and brightness back to their default values (64).

Test Patterns — Allow the user to select one of three built-in test patterns (color bars, grayscale, or alternating pixels), which help calibrate the display device. When Off is selected, the receiver outputs the video signal from the source device.

Audio Adjustment area
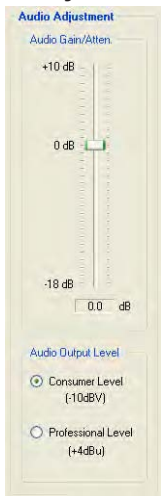
Figure 3-13 — Audio Adjustment area

Audio Gain/Attenuation — Provides a click and drag slider control to select the input audio gain or attenuation value, from -18 dB to +10 dB in 1.0 dB increments.

`NOTE` *Changes to the input gain or attenuation are made in the transmitter. If the control computer is connected to the receiver and Link 2 is not active, the gain and attenuation values cannot be changed.*

Audio Output Level — Provides radio buttons to allow a choice between consumer level (-10 dBV) or professional level (+4 dBu) for the audio output.

Firmware for FOX 2G Tx/Rx AV

Firmware can be downloaded onto the unit from the Extron Web site (www.extron.com). The transmitter and receiver require different firmware and must both be upgraded separately.

SIS Command Validity Table

If only one fiber optic channel is enabled, the ability to configure the system through SIS commands is limited by the lack of return communication from the receiver to the transmitter.

All commands issued through the transmitter are valid because link 1 allows signals to be forwarded to the receiver. However, responses to queries originating from the transmitter about the status of the receiver will return invalid data.

All configuration of the receiver by commands issued through the receiver will be valid. Attempts to configure the the transmitter through the receiver in the absence of link 2 will be invalid.

The following table shows the validity of commands issued through the receiver when only link 1 is active:

Adjustment	
Color	Valid
Tint	Valid
Brightness	Valid
Contrast	Valid
Audio gain/ attenuation	Invalid
Audio mute	Valid
Audio output level	Valid
Output configuration	Valid
Input configuration	Invalid
Daisy chain mode	Valid
Test pattern	Valid
Video mute	Valid

Configuration, cont'd

Appendix A

Reference Information

Specifications

Included Parts

Optional Accessories

Reference Information

Specifications

NOTE *The FOX 2G AV consists of a transmitter (FOX 2G Tx AV) and a receiver (FOX 2G Rx AV) with one or two fiber optic cables linking the two units.*

NOTE *The analog video input signal is digitized pixel for pixel in the transmitter, sent digitally through the fiber cable, and converted back to analog video in the receiver.*

NOTE *The analog audio signal(s) is (are) digitized in the transmitter, sent through the fiber cable, and converted back to analog in the receiver.*

NOTE *These transceivers are class 1 laser products. They meet the safety regulations of IEC-60825, FDA 21 CFR 1040.10, and FDA 21 CFR 1040.11.*

Optical fiber interconnection between transmitter and receiver

Number/type .... 1 or 2 fiber optic

NOTE *Only one fiber is required to transmit video, audio, and unidirectional data. A second fiber is required to transit return data for bidirectional control/communication*

Connectors .... 2 LC connectors

Operating distance........................ 30 km (18.75 miles) with singlemode (SM) cables with an SM model

500 m (1640') with multimode (MM) cables with an MM model

NOTE *Operating distance is approximate. These are typical distances. The maximum distance may be greater than these numbers depending on factors such as fiber type, fiber bandwidth, connector splicing, losses, modal or chromatic dispersion, environmental factors and kinks.*

Nominal peak wavelength........... 850 nm for FOX 2G AV MM model; 1310 nm for FOX 2G AV SM model

Data rate .... 2.125 Gbps

Transmission power

Singlemode......................... -5 dBm, typical

Multimode.......................... -5 dBm, typical

Maximum receiver sensitivity

    Singlemode......................... -18 dBm, typical

    Multimode.......................... -12 dBm, typical

Optical loss budget

    Singlemode......................... 13 dB, maximum

    Multimode.......................... 7 dB, maximum

Video

Gain.. Unity

Standards

    Input..................................... NTSC 3.58, NTSC 4.43, PAL, SECAM, autodetected

    Output.................................. NTSC 3.58, PAL (follows input vertical rate)

Decoder type................................. Adaptive 2D, digital comb filter

Video input — transmitters

Number/type .... 1 component (Y, R-Y, B-Y), S-video, composite video

Connectors .... 1 x 3 female BNC *or* (1) female 4-pin mini DIN for S-video

Nominal level .... 1.0 Vp-p for Y of component video and S-video, and for composite video
0.7 Vp-p for R-Y and B-Y of component video
0.3 Vp-p for C of S-video

Minimum/maximum levels........ Analog: 0.3 V to 1.5 Vp-p with no offset

Impedance...................................... 75 ohms @ 5 MHz

Return loss..................................... -30 dB for Y/VID, B-Y/C, R-Y @ 5 MHz

Input coupling .... AC

Video output — receivers

Number/type .... 1 component (Y, R-Y, B-Y) video, S-Video, composite video

Connectors .... 1 x 3 female BNC *or* (1) female 4-pin mini DIN

Nominal level .... 1.0 Vp-p for of Y component video and S-video, and for composite video
0.7 Vp-p for R-Y and B-Y of component video
0.3 Vp-p for C of S-video

Minimum/maximum levels........ 0.3 V to 1.5 Vp-p

Impedence .... 75 ohms @ 5 MHz

Reference Information, cont'd

Return loss....................................... <-40 dB @ 5 MHz

DC offset.. + 350 mV, maximum, with input at 0 offset

Video delay .... 1-2 frames

Audio

Gain

    Range .... Adjustable, -18 to +10 dB; default

    Default .... Unbalanced output: -6 dB;
                                        balanced output: 0 dB

Frequency response .... 20 Hz to 20 kHz, ± 0.5 dB

THD + Noise................................... 0.15% @ 1 kHz at nominal level

S/N... >80 dB at maximum output (unweighted)

CMRR.. 65 dB @ 20 Hz to 20 kHz

Audio bits per sample .... 18 bits per channel, 2 channels (L, R)

Sampling rate................................. 48 kHz

Audio inputs — transmitters

Number/type .... 1 stereo, balanced/unbalanced *or*
                                        2 mono, balanced/unbalanced

Connectors .... (1) 3.5 mm captive screw connector, 5-pole

Impedance...................................... >10k ohms unbalanced,
                                        >20k ohms balanced, DC coupled

Nominal level .... +4 dBu (1.23 Vrms), -10 dBV (316 mVrms)

Maximum level.............................. >17 dBV (unbalanced) @ 1% THD + N

NOTE   *0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu*

Audio outputs — receivers

Number/signal type..................... 1 stereo, balanced/unbalanced *or*
                                        2 mono, balanced/unbalanced

Connectors .... (1) 3.5 mm captive screw connector, 5-pole

Impedance...................................... 50 ohm unbalanced; 100 ohm balanced

Nominal level .... +4 dBu (1.23 Vrms), -10 dBV (316 mVrms)

Maximum level (Hi-Z) .... >+19 dBu, unbalanced @ 1% THD + N

Maximum level (600 ohms) .... >15 dBm, unbalanced @ 1% THD + N

Audio delay .... 1.5 frames

Control/remote

Serial control ports on each unit (transmitter and receiver)

        Control .... 1 RS-232, 3.5 mm captive screw connector, 5 pole (3 pins are used) (rear panel)

                                         1 RS-232, 2.5 mm mini stereo jack (front panel)

        Pass-through .... 1 RS-232, 3.5 mm captive screw connector, 5 pole (3 pins are used) (rear panel)

Baud rate and protocol

        Control .... 9600 baud, 8 data bits, 1 stop bit, no parity

        Pass-through .... 9600 to 115200 baud

Serial control pin configurations

        Pass through .... Captive screw connector: 1 = TX, 2 = RX, 3 = GND

        Control .... Captive screw connector: 3 = GND, 4 = TX, 5 = RX

                                           Mini stereo jack: tip = TX, ring = RX, sleeve = GND

Program control .... Extron's control/configuration program for Windows®

                                           Extron's Simple Instruction Set (SIS)

General

External power supply .... 100 VAC to 240 VAC, 50/60 Hz, external; to 12 VDC, 2 A max. regulated

Power input requirements .... 12 VDC, 0.6 A

Temperature/humidity .... Storage -40° to +158°F (-40° to +70°C) / 10% to 90%, non-condensing
Operating +32° to +122°F (0° to +50°C) / 10% to 90%, non-condensing

Cooling .... Convection, vents on side and top

Mounting

        Rack mount .... Yes, with optional 1U 9.5" deep rack shelf (RSU 129, #60-190-01; RSB 129, #60-604-01) or 1U 6" deep rack shelf (RSU 126, #60-190-10; RSB 126, #60-604-10)

        Furniture mount .... Yes, with optional under-desk mounting kit (MBU 125, #70-077-01)

Enclosure type .... Metal

Enclosure dimensions .... 1.7" H x 4.3" W x 6.0" D (1U high, quarter rack wide)
4.3 cm H x 10.9 cm W x 15.2 cm D (Depth excludes connectors)

Reference Information, cont'd

Product weight .... 0.8 lbs (0.4 kg)

Shipping weight .... 3 lbs (2 kg) per unit

Vibration.. ISTA 1A in carton (International Safe Transit Association)

Regulatory compliance

      Safety................................... CE, C-tick, CUL, FDA Class 1, UL

      EMI/EMC .... CE, C-tick, FCC Class A, ICES, VCCI

MTBF.. 30,000 hours

Warranty .... 3 years parts and labor

NOTE   *All nominal levels are at ±10%.*

NOTE   *Specifications are subject to change without notice.*

Included Parts

Included parts	Replacement part number
(1) FOX 2G Tx AV MM (transmitter)	60-941-11
or (1) FOX 2G Tx AV SM (transmitter)	60-941-12
or (1) FOX 2G Rx AV MM (receiver)	60-941-21
or (1) FOX 2G Rx AV SM (receiver)	60-941-22
(1) 12 VDC Desktop power supply	
(1) IEC cord	
(1) MM or SM fiber patch cable	
(2) 5-pole 3.5 mm blue captive screw	
(1) 2-pole 3.5 mm blue captive screw	
(1) 2-pole 3.5 mm orange captive screw	
(4) Rubber feet (not attached)	
Fox 2G Tx/Rx AV User's manual	
Audio Connector Wiring Instruction Card	
Windows control program	

Optional Accessories

Accessory	Part number
PMK 350	70-563-02, -03
PMK 200	70-077-04
RSU 129 1U, 9.5" rack shelf kit	60-190-01
RSB 129 1U, 9.5" rack shelf	60-604-01
RSU 126 1U, 6" rack shelf kit	60-190-10
RSB 126 1U, 6" rack shelf	60-604-10
MBU 125 Under desk mounting kit	70-077-01
MBD 129 Through desk mounting kit	70-077-02
CSR 6 adapter	26-575-01
S-video cables	
BNC cables	

Reference Information, cont'd

Extron's Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:

Extron Electronics
1001 East Ball Road
Anaheim, CA 92805, USA

Asia:

Extron Electronics, Asia
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363

Europe, Africa, and the Middle East:

Extron Electronics, Europe
Beeldschermweg 6C
3821 AH Amersfoort
The Netherlands

Japan:
Extron Electronics, Japan
Kyodo Building
16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions or non-Extron authorized modification to the product.

If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), 65.6383.4400 (Asia), or 81.3.3511.7655 (Japan) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

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Inside Asia Only

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Extron **Japan**

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Inside China Only

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Extron **Middle East**

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